

UNIT 6 PRACTICE TEST SOLUTIONS

1.) a) 0.9205

b) 0.5878

2 a) 82°

b) 74°

3.) $\sin 60^\circ = \frac{a}{12}$

$12 \sin 60^\circ = a$

$6\sqrt{3} = a$

$10.4 = a$

$\cos 60^\circ = \frac{b}{12}$

$12 \cos 60^\circ = b$

$6 = b$

could also use
 $\sin 30^\circ = \frac{b}{12}$ $\cos 30^\circ = \frac{a}{12}$

4.) $\cos 38^\circ = \frac{x}{19}$

$19 \cos 38^\circ = x$

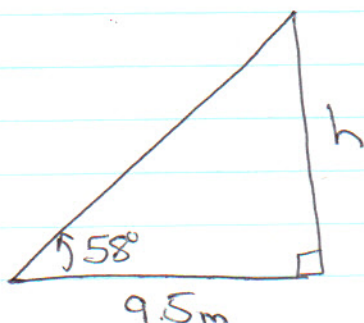
$14.97 \text{ cm} = x$

$\cos \theta = \frac{1.2}{2.6}$

$\theta = \cos^{-1}(1.2/2.6)$

$\theta = 63^\circ$

5.)

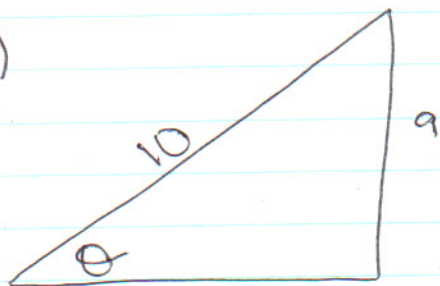


$\tan 58^\circ = \frac{h}{9.5}$

$9.5 \tan 58^\circ = h$

$15.2 \text{ m} = h$

6.)

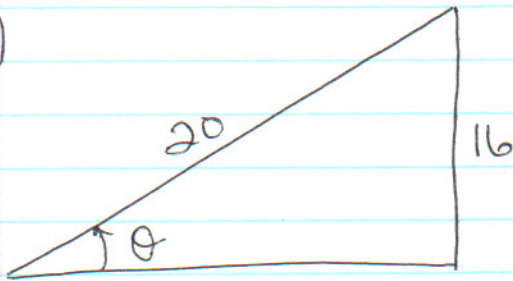


$\sin \theta = \frac{9}{10}$

$\theta = \sin^{-1}(9/10)$

$\theta = 64^\circ$

7.)

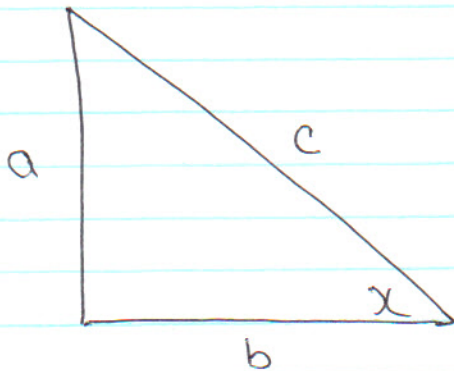


$$\sin \theta = \frac{16}{20}$$

$$\theta = \sin^{-1} \left(\frac{16}{20} \right)$$

$$\theta = 53^\circ$$

8.)



$$\sin x = \frac{a}{c} \quad \cos x = \frac{b}{c}$$

$$\frac{a}{c} = \frac{b}{c}$$

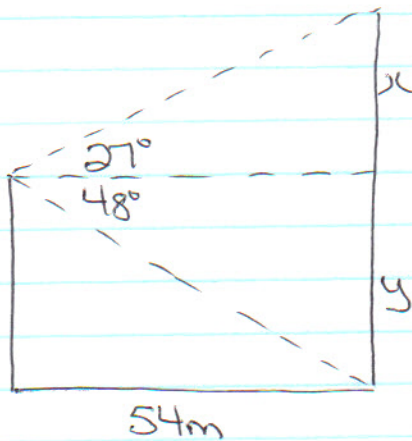
$$\therefore a = b$$

which means we started with a square and divided it in half

$$\therefore x = 90/2$$

$$x = 45^\circ$$

9.)



$$h = x + y$$

$$\tan 27^\circ = \frac{x}{54}$$

$$54 \tan 27^\circ = x$$

$$27.5 = x$$

$$\tan 48^\circ = \frac{y}{54}$$

$$54 \tan 48^\circ = y$$

$$60 = y$$

$$\therefore h = 27.5 + 60 = 87.5\text{m}$$

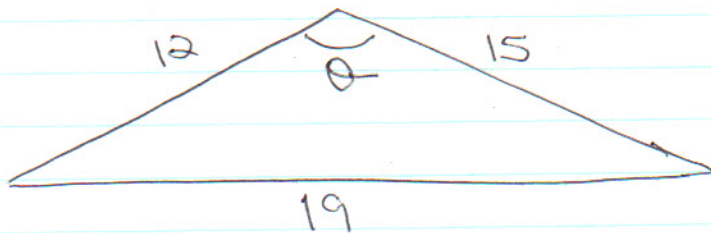
$$10.) \sin \theta = \frac{b}{c} \quad \cos \theta = \frac{a}{c} \quad \tan \theta = \frac{b}{a}$$

$$11.) \frac{X}{\sin 51^\circ} = \frac{16.4}{\sin 79^\circ}$$

$$X = \frac{16.4 \sin 51^\circ}{\sin 79^\circ}$$

$$X = 13$$

12.)



$$19^2 = 12^2 + 15^2 - 2(12)(15)\cos \theta$$

$$\frac{19^2 - 12^2 - 15^2}{-2(12)(15)} = \cos \theta$$

$$\frac{-8}{-360} = \cos \theta$$

$$\cos^{-1}\left(\frac{8}{360}\right) = \theta$$

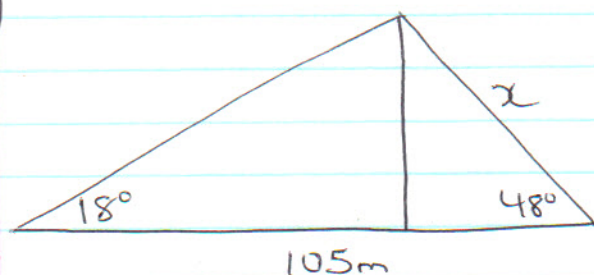
$$89^\circ = \theta$$

- 13.) Consider the slopes here.... -1 and +1
These are perpendicular $\therefore 90^\circ$

If they weren't perpendicular

- find POI
- find 2 more points (1 on either line)
- use distance formula to find length of each side
- use cosine law to find angle between lines

14.)



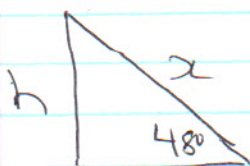
Use sine law to find x . (pretend no tower)

$$\frac{x}{\sin 18^\circ} = \frac{105}{\sin 48^\circ}$$

$$x = \frac{105 \sin 18^\circ}{\sin 48^\circ} \\ = 43.7\text{m}$$

* other ways
possible

Now use SOHCAHTOA



$$\sin 48^\circ = \frac{h}{43.7}$$

$$h = 43.7 \sin 48^\circ$$

$$h = 32.5\text{m}$$

$$15.) \frac{\sin \theta}{12} = \frac{\sin 58^\circ}{19}$$

$$\sin \theta = \frac{12 \sin 58^\circ}{19}$$

$$\sin \theta = 0.5356$$

$$\theta = \sin^{-1}(0.5356)$$

$$\theta = 32^\circ$$

$$\alpha = 180 - 58 - 32 \\ = 90^\circ$$

$$\frac{19}{\sin 58^\circ} = \frac{x}{\sin 90^\circ}$$

$$\frac{19 \sin 90^\circ}{\sin 58^\circ} = x$$

$$22.4 = x$$

Really poorly drawn
triangle!

16.) Easiest thing here... find x and y intercepts

X-int: set $y=0$

$$0 = \frac{1}{2}x - 7$$

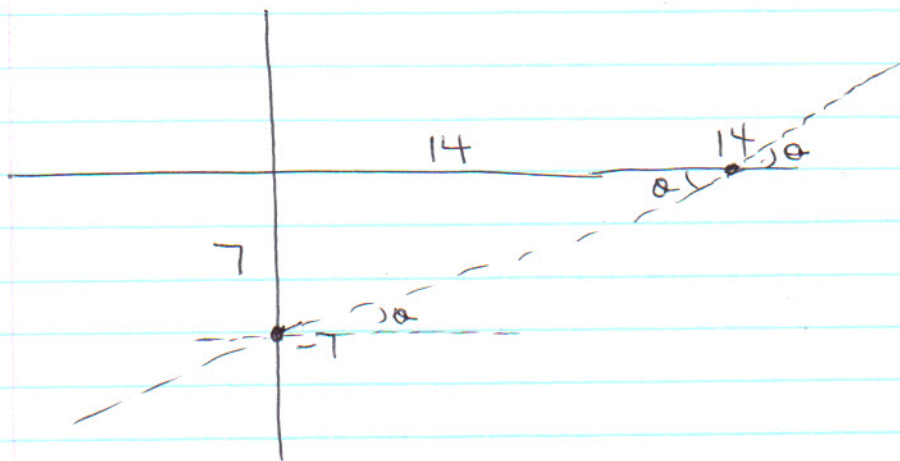
$$7 = \frac{1}{2}x$$

$$14 = x$$

y-int: set $x=0$

$$y = \frac{1}{2}(0) - 7$$

$$y = -7$$



$$\tan \theta = \frac{7}{14}$$

$$\theta = 27^\circ$$

[It's just the slope!]